

AMENDMENTS TO THE CLAIMS

The following is a complete listing of revised claims with a status identifier in parenthesis.

LISTING OF CLAIMS

1. (Currently Amended) An optical fiber connector comprising: ~~in which a lens is formed at a resin injection portion located at a front end of an optical fiber inserted in a connector main body,~~

~~wherein the~~ a connector main body ~~includes~~ including a first pipe for receiving ~~[[the]]~~ an optical fiber inside, and a second pipe for receiving the first pipe inside~~[[,]]~~; and

a resin injection portion located at a front end of the optical fiber and having a first resin and a second resin formed therein, the first resin forming a lens body, and the second resin forming a lens surface; wherein

the lens surface is formed by a ~~[[dead]]~~ weight of the second resin itself and a surface tension of the second resin, and

~~wherein~~ the lens is shaped ~~taking into account~~ based on a positioning error of the optical fiber ~~with respect~~ relative to an outer diameter of the connector.

2. (Original) The optical fiber connector as set forth in Claim 1, wherein the connector main body is made of stainless steel.

3. (Previously Presented) The optical fiber connector as set forth in Claim 1, wherein the lens is made from a plurality of resins having different refractive indexes.

4. (Currently Amended) The optical fiber connector as set forth in Claim 3, wherein a resin with the largest refractive index among the plurality of resins defines ~~[[a]]~~ the surface of the lens.

5. (Currently Amended) A method for manufacturing an optical fiber connector in which a lens is formed at a resin injection portion located at a front end of an optical fiber inserted in a connector main body,

said method comprising:

a connector forming step of forming the connector main body by inserting a first pipe in a second pipe, wherein the first pipe receives the optical fiber inside, and the second pipe receives the first pipe inside;

a fiber inserting step of inserting the optical fiber in the first pipe of the connector main body formed in the connector forming step; and

a lens forming step of forming a lens, including a lens body and a lens surface, by injecting a first resin to form the lens body, and a second resin to form the lens surface, at least one of the first and second resin being a light-hardened resin or a thermosetting resin ~~in the resin injection portion~~.

6. (Original) The method as set forth in Claim 5, wherein:

said lens forming step includes:

a first resin injecting and hardening step of injecting a first resin, made from a light-hardened resin or a thermosetting resin, into the resin injection portion, and hardening the first resin;

a second resin injecting step of injecting a second resin, made from a light-hardened resin or a thermosetting resin, onto the hardened first resin so as to form a pre-lens; and

a second resin hardening step of hardening the second resin so as to form the lens.

7. (Original) The method as set forth in Claim 6, wherein the second resin has a higher refractive index than the first resin.

8. (Previously Presented) The method as set forth in Claim 6, wherein the first resin and the second resin are UV-hardened resins, and are hardened by irradiation of ultraviolet light.

9. (Currently Amended) The method as set forth in Claim 6, wherein:
in said second resin hardening step, the wavefront aberration of light that has transmitted through the pre-lens is measured, wherein the lens is so shaped as to have a wavefront aberration ~~close to~~ of about 0, taking into account a positioning error of the optical fiber with respect to an outer diameter of the connector, and wherein a lens surface is formed by a ~~weight~~ weight and a surface tension of the second resin itself.

10. (Previously Presented) An optical coupling apparatus, comprising:
a light source or optical information output means for outputting optical information;
an optical fiber connector as set forth in Claim 1 for optically coupling with emitted light from the light source or the optical information output means; and
setting means having a groove for setting the optical fiber connector and the light source or the optical information output means thereon.

11. (Currently Amended) The optical fiber connector as set forth in Claim 2, wherein the first and second resins have ~~lens is made from a plurality of resins having~~ different refractive indexes.

12. (Currently Amended) The optical fiber connector as set forth in Claim 11, wherein a resin with the largest refractive index among the first and second ~~plurality of~~ resins defines a surface of the lens.

13. (Previously Presented) The method as set forth in Claim 7, wherein the first resin and the second resin are UV-hardened resins, and are hardened by irradiation of ultraviolet light.

14. (Currently Amended) The method as set forth in claim 7, wherein:

in said second resin hardening step, the wavefront aberration of light that has transmitted through the pre-lens is measured, wherein the lens is so shaped as to have a wavefront aberration of about ~~close to~~ 0, taking into account a positioning error of the optical fiber with respect to an outer diameter of the connector, and wherein a lens surface is formed by a [[dead]] weight and a surface tension of the second resin itself.

15. (Currently Amended) The method as set forth in claim 8, wherein:

in said second resin hardening step, the wavefront aberration of light that has transmitted through the pre-lens is measured, wherein the lens is so shaped as to have a wavefront aberration of about ~~close to~~ 0, taking into account a positioning error of the optical fiber with respect to an outer diameter of the connector, and wherein a lens surface is formed by a [[dead]] weight and a surface tension of the second resin itself.

16. (Previously Presented) An optical coupling apparatus, comprising:

a light source or optical information output means for outputting optical information;

an optical fiber connector as set forth in Claim 2 for optically coupling with emitted light from the light source or the optical information output means; and

setting means having a groove for setting the optical fiber connector and the light source or the optical information output means thereon.

17. (Previously Presented) An optical coupling apparatus, comprising:

a light source or optical information output means for outputting optical information;

an optical fiber connector as set forth in Claim 3 for optically coupling with emitted light from the light source or the optical information output means; and

setting means having a groove for setting the optical fiber connector and the light source or the optical information output means thereon.

18. (Previously Presented) An optical coupling apparatus, comprising:

a light source or optical information output means for outputting optical information;

an optical fiber connector as set forth in Claim 4 for optically coupling with emitted light from the light source or the optical information output means; and

setting means having a groove for setting the optical fiber connector and the light source or the optical information output means thereon.